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IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the Application:

LISTING OF CLAIMS:

1. (Currently Amended) A circuit board processing system, comprising:
 - a circuit board fabrication stage configured to fabricate a circuit board having a set of circuit board pads;
 - a solder fusing stage coupled to the circuit board fabrication stage, the solder fusing stage being configured to (i) apply flux and solder concurrently to the set of circuit board pads, and (ii) activate the flux and melt the solder to form a set of substantially flat solder coatings which is fused to the set of circuit board pads; and
 - a washing stage coupled to the solder fusing stage, the washing stage being configured to remove contamination from a surface of the circuit board having the circuit board pads and from the set of substantially flat solder coatings which is fused to the set of circuit board pads,
 - wherein the solder fusing stage comprises:
 - a metallic stencil,
 - an applicator operable to apply a paste containing the flux and the solder onto the set of circuit board pads through the metallic stencil, and
 - a squeegee operable to remove the paste from the metallic stencil.
2. (Original) The circuit board processing system of claim 1 wherein the solder is a substantially lead-free alloy, and wherein the solder fusing stage is configured to:

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integrate a set of layers of the substantially lead-free alloy with the set of circuit board pads.

3. (Currently Amended) The circuit board processing system of claim 1 wherein the squeegee of the solder fusing stage is configured as the applicator to:
print ~~[[a]]~~ the paste onto the set of circuit board pads through ~~[[a]]~~ the metallic stencil, ~~the paste containing the flux and the solder.~~
4. (Currently Amended) The circuit board processing system of claim ~~[[3]]~~ 1 wherein the paste has a substantially low viscosity, and wherein the solder fusing stage is further configured to:
remove the metallic stencil to enable (i) the paste to substantially slump and (ii) the flux to flow over the set of circuit board pads.
5. (Currently Amended) The circuit board processing system of claim ~~[[3]]~~ 1 wherein the applicator of the solder fusing stage is configured to:
deposit the paste onto the set of circuit board pads through the metallic stencil using a vapor deposition process.
6. (Original) The circuit board processing system of claim 5 wherein the solder fusing stage, when depositing the paste, is configured to:
provide an amount of the paste on the set of circuit board pads to leave, as the set of substantially flat solder coatings, a solder layer that is substantially 0.5 mils in thickness on the set of circuit board pads.
7. (Original) The circuit board processing system of claim 6 wherein the metallic stencil defines a set of apertures to expose substantially half of a

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top surface of each circuit board pad; and wherein the solder fusing stage, when providing the amount of the paste, is configured to:

supply the paste through the set of apertures defined by the metallic stencil to cover substantially half of the top surface of each circuit board pad with the paste.

8. (Original) The circuit board processing system of claim 7 wherein the solder fusing stage, when supplying the paste through the set of apertures defined by the metallic stencil, is configured to:

distribute a stack of the paste which is substantially 2.0 mils in height over each circuit board pad.

9. (Original) The circuit board processing system of claim 1 wherein the washing stage is configured to:

remove the contamination from the set of substantially flat solder coatings prior to mounting circuit board components to the circuit board.

10. (Original) The circuit board processing system of claim 1, further comprising:

a protecting stage coupled to the washing stage, the protecting stage being configured to place a protective coating over the circuit board to cover the set of substantially flat solder coatings which is fused to the set of circuit board pads.

Claims 11-38 (Canceled).

39. (Previously Presented) The circuit board processing system of claim 1 wherein the circuit board pads are Surface Mount Technology (SMT) pads which are adapted to soldering to integrated circuit packages having SMT

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package contacts; and wherein the solder fusing stage, when activating the flux and melting the solder to form the set of substantially flat solder coatings which is fused to the set of circuit board pads, is configured to:

apply high heat to form, as the set of substantially flat solder coatings, a set of solderable structures having (i) intermetallic bonds with the set of SMT pads, and (ii) external surfaces with high solder affinity in order to solder to the SMT package contacts of the integrated circuit packages during an SMT circuit board assembly process.

40. (Previously Presented) The circuit board processing system of claim 39 wherein the circuit board fabrication stage is configured to fabricate, as the circuit board having the set of circuit board pads, a printed circuit board structure adapted to solder to multiple circuit board components during the SMT circuit board assembly process.

41. (Currently Amended) A circuit board processing system, comprising:

a circuit board fabrication stage configured to fabricate a circuit board having a set of Surface Mount Technology (SMT) circuit board pads;

a solder fusing stage coupled to the circuit board fabrication stage, the solder fusing stage being configured to (i) apply flux and solder concurrently to the set of SMT circuit board pads, and (ii) activate the flux and melt the solder to form a set of substantially flat solder coatings which is fused to the set of SMT circuit board pads; and

a washing stage coupled to the solder fusing stage, the washing stage being configured to remove contamination from a surface of the circuit board having the SMT circuit board pads and from the set of substantially flat solder coatings which is fused to the set of SMT circuit board pads,

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wherein the solder fusing stage comprises:

a metallic stencil,

an applicator operable to apply a paste containing the flux
and the solder onto the set of SMT circuit board pads through the
metallic stencil, and

a squeegee operable to remove paste from the metallic
stencil.

42. (New) The circuit board processing system of claim 1, wherein the metallic stencil comprises stencil sides that define a set of apertures, the stencil sides being outwardly tapered from a paste application surface of the metallic stencil to an opposing circuit board pad surface of the metallic stencil.
43. (New) The circuit board processing system of claim 1, wherein the metallic stencil defines a set of apertures, the applicator operable to apply two or more mounds of paste to one of the circuit board pads of the set of circuit board pads through the set of apertures defined by the metallic stencil.
44. (New) The circuit board processing system of claim 1, wherein the solder fusing stage comprises a cooling station having a cooling device that provides a substantially steady temperature, less than an ambient room temperature, to the circuit board.
45. (New) The circuit board processing system of claim 41 wherein the squeegee of the solder fusing stage is configured as the applicator to:
print the paste onto the set of circuit board pads through the metallic stencil.

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46. (New) The circuit board processing system of claim 41 wherein the applicator of the solder fusing stage is configured to:
deposit the paste onto the set of circuit board pads through the metallic stencil using a vapor deposition process.
47. (New) The circuit board processing system of claim 41, wherein the metallic stencil comprises stencil sides that define a set of apertures, the stencil sides being outwardly tapered from a paste application surface of the metallic stencil to an opposing circuit board pad surface of the metallic stencil.
48. (New) The circuit board processing system of claim 41, wherein the metallic stencil defines a set of apertures, the applicator operable to apply two or more mounds of paste to one of the circuit board pads of the set of circuit board pads through the set of apertures defined by the metallic stencil.
49. (New) The circuit board processing system of claim 41, wherein the solder fusing stage comprises a cooling station having a cooling device that provides a substantially steady temperature, less than an ambient room temperature, to the circuit board.
50. (New) The circuit board processing system of claim 1, wherein the metallic stencil is configured to withstand multiple uses.